

『영미연구』

제61집 (2024): 73-98

<http://doi.org/10.25093/ibas.2024.61.73>

# The Effects of Context on L2 Learners' Verb Subcategorization Biases\*

Ji Hyon Kim

Hankuk University of Foreign Studies

## [Abstract]

Many verbs may be used with more than one subcategorization frame which will vary in their probability of occurrence. This study investigated whether the subcategorization frames chosen by L2 learners of English were affected by contextual information preceding the verb. Thirty-three Korean L2 learners completed a written sentence production task with twenty-two polysemous verbs for which the preferred subcategorization frame differed by sense. The sentence preceding the verb provided biasing context promoting a specific sense of the verb, which in turn increased preference toward a particular subcategorization frame. The sentence completion data demonstrated that direct object (DO) complements were used more often when the verb was preceded by context favoring the DO-biased sense, and sentential complement (SC) subcategorization frames were used more frequently when the preceding context favored the SC-biased sense. These results indicate that L2 learners are sensitive to the fact that the subcategorization frames of verbs are contingent on the sense of the verb promoted by the context. Therefore, this study

---

\* This work was supported by Hankuk University of Foreign Studies Research Fund 2024.

suggests that in addition to verb bias, verb sense should be incorporated as a factor in interactive constraint-based models.

**Key Words: verb subcategorization bias, context, sense, L2 learners, written sentence production**

## 1. Introduction

Verbal knowledge is an essential part of successful language comprehension and production. This knowledge entails the range of syntactic arguments a verb can take, referred to as verb subcategorization bias information (MacDonald et al., 1994), and any semantic constraints on its possible arguments (McRae, Ferretti, & Amyote, 1997). In addition to playing a crucial role in processing and production, a verb's subcategorization information has also been a significant component in testing various psycholinguistic theories.

Two main theories of sentence processing differ in their claims regarding the time course of the use of non-syntactic information during language processing. Serial modular models of processing (Frazier, 1978; Frazier & Clifton, 1996) claim that non-syntactic, lexical information such as verb subcategorization bias, animacy, and plausibility do not affect the initial stage of processing and only play a role in the reanalysis stage. Constraint-based or expectation-driven models (MacDonald et al., 1994; Spivey & Tanenhaus, 1998), however, posit that non-syntactic, lexically specific sources of information are used to determine initial structural analyses in sentence processing in addition to syntactic information.

Temporarily ambiguous sentences are often used to investigate whether certain

types of information are used and when that information is used during language processing or production. The direct object/sentential complement (DO/SC) ambiguity is one of the structural ambiguities that is widely used, and is illustrated in (1). In this structure, a temporary ambiguity arises at the noun phrase (NP) that follows the verb. The post-verbal NP *the baby* could either be the direct object of the verb *heard* as in (1)a, or it could be the subject of the following embedded sentence, as shown in (1)b.

- (1) The woman heard the baby ...
  - a. ... in the hallway. (DO completion)
  - b. ... had cried all night. (SC completion)

This type of temporary ambiguity arises because the complementizer *that* may be omitted in such constructions (Lapata et al., 2001). Therefore, the reader or listener is not able to discover how the true structure of the sentence unfolds until the disambiguation region which follows the post-verbal ambiguous NP. However, for most verbs, the probabilities that a verb is followed by a DO or SC argument are usually not equal. Most verbs exhibit a preference for one of the two structures, which is referred to as verb subcategorization bias. Knowledge of verb subcategorization bias, therefore, is an important source of information that guides readers and listeners during the processing of temporarily ambiguous sentences and helps to prevent reanalysis due to incorrect predictions.

Although some studies have provided experimental data suggesting that verb subcategorization bias information does not affect the initial stages of processing (Ferreira & Henderson, 1990; Mitchell, 1987), multiple studies with monolingual English speakers (Garnsey et al., 1997; Trueswell et al., 1993; Wilson & Garnsey, 2009) and L2 learners (Dussias and Cramer Scaltz, 2008; Qian et al., 2019) have

reported results suggesting that verb bias information is actively used to disambiguate sentences with temporary ambiguity in the early stages of processing.

## 2. Literature Review

### 2.1. Verb Subcategorization Bias in Ambiguity Resolution

One of the early studies investigating the role of verb subcategorization bias information in ambiguity resolution was conducted by Trueswell et al. (1993). Using self-paced reading and eyetracking, Trueswell and colleagues reported that longer reading times were observed at the disambiguation region of temporarily ambiguous sentences when DO-biased verbs were used in an SC construction compared to unambiguous control sentences. However, a problematic issue was discovered in the design of this study, as the same sentence frame was used for verbs with DO-bias and SC-bias, which resulted in a confound between verb subcategorization bias and DO plausibility of the post-verbal NP. To address this issue, Garnsey et al. (1997) included DO plausibility as an independent factor in their experiment, crossing DO plausibility with verb subcategorization bias. The results of their eyetracking study were consistent with those previously reported by Trueswell et al. (1993). Ambiguity effects were found at the disambiguation region when DO-biased verbs were used in an SC construction, but only when the post-verbal noun was a plausible DO.

A more recent study discovered effects of verb subcategorization bias even when the temporary ambiguity was disambiguated toward the simpler DO structure (Wilson & Garnsey, 2009). These results provide evidence that the difficulty found for DO-biased verbs used in SC constructions in the previous studies was not due to a

general preference for the structurally simpler DO structure, as claimed by proponents of serial, modular models of processing (Frazier & Clifton, 1996).

More recent studies have investigated whether L2 learners are also able to utilize verb subcategorization bias during sentence processing in a way similar to monolingual English speakers. In a self-paced reading study, L1 Spanish L2 English bilinguals showed evidence of processing difficulty when a verb was used in a structure was not consistent with its subcategorization bias (Dussias & Cramer Scaltz, 2008). These results demonstrate that like monolingual English speakers, L2 learners are also able to keep track of subcategorization frequencies and use that information to guide processing.

Lee, Lu, and Garnsey (2013) also found effects of verb subcategorization bias information in an eyetracking study with Korean second language (L2) learners of English. An interaction of verb subcategorization bias and L2 proficiency was also reported, so that L2 learners with high proficiency exhibited a similar pattern of reading times with the monolingual control group, while the L2 learners with low proficiency showed a different pattern. Reading times from the low proficiency group suggested that the L2 learners were relying on the presence of the complementizer *that* in addition to verb subcategorization bias to predict the upcoming structure in temporarily ambiguous sentences. In a follow-up study, similar results were found for L1 Mandarin L2 learners (Qian et al., 2019), suggesting that L2 proficiency was a factor that could affect how verb subcategorization information was used in L2 processing.

In addition to studies investigating effects of verb subcategorization bias in monolingual and L2 processing, multiple studies have examined the role of verb subcategorization in sentence production. Ferreira and Schotter (2013) conducted an experimental study in which monolingual English speakers were asked to repeat

sentences with embedded clauses. The participants showed a tendency to include the complementizer *that* more often when repeating sentences with an SC argument after a DO-biased verb, which was interpreted as an attempt to alleviate any processing difficulty on the part of the listener due to a mismatch between verb subcategorization bias and the actual sentence structure.

Gahl and Garnsey (2004) reported results pointing in the same direction. Monolingual English speakers were observed to delete the /t/ or /d/ in their productions of sentences when the verb was used in a sentence construction that was consistent with its verb subcategorization bias. Gahl and Garnsey claim that the inclination to reduce production when verb bias information matches the structure is consistent with previous studies that found frequent words tend to shorten, as do words that can be predicted given the presence of a neighboring word.

In a norming study designed to examine the written production of L1 Spanish L2 English learners, the L2 learners considered verb subcategorization bias when choosing sentence structure (Dussias & Cramer Scaltz, 2008). 34 out of 40 English verbs used by the L2 learners were used with the same sentence structure as chosen by the monolingual control group. A subsequent study by Kim (2021) also found that L1 Korean L2 English learners were able to actively use verb subcategorization information in their written production.

To summarize, previous studies suggest that verb subcategorization bias is an important source of information used by both monolinguals and L2 learners in language processing and production to guide predictions regarding upcoming structure and lessen processing difficulty stemming from temporary ambiguity.

## 2.2. Verb Sense and Structure

In the wide range of previous research reviewed in section 2.1., verb subcategorization bias is calculated as the result of the probabilistic frequencies for each of the possible subcategorization frames in which a verb might occur. Therefore, verb bias is measured across all occurring instances of a verb. Hare, McRae, and Elman (2003) argued that this approach could be problematic, considering the complex relationship between verb meaning and syntactic structure. They observed that for many verbs that allow multiple subcategorization possibilities, the meaning of the verb may also differ accordingly. For example, when the verb *find* is used in a DO subcategorization frame, it is most often used to mean 'locate,' e.g., *She found the novel on the table*. In contrast, when the verb *find* is used with an SC subcategorization frame, it is more frequently used to denote a mental event or attitude, e.g., *He found the train had left without him*.

In an analysis of the Wall Street Journal corpus and Brown corpus, Roland and Jurafsky (2002) found that systematic differences in subcategorization probabilities were closely associated with verb sense, resulting in different estimates of verb subcategorization bias across different corpora. Based on these findings, Hare et al. (2003) claim that calculating verb subcategorization frequencies over all occurring instances of a verb may not be accurate, and that verb subcategorization bias may be partially determined by the relationship between verb sense and structure.

In order to investigate whether the subcategorization preferences of verbs are sense-specific, Hare et al. (2003) conducted a written production task with twenty English verbs that could take both DO and SC arguments. The verbs were polysemous with meanings that were highly related, often with a more concrete, physical meaning (as in the verb *grasp* used to mean 'grip') and an extended, more

abstract meaning (as in the verb *grasp* used to mean ‘come to understand’). In the written production task, monolingual English speakers completed sentence fragments consisting of a subject NP and the target verb.

The key point of this study was that the sentence fragments were preceded by sentence contexts designed to bias the participants toward a specific sense of the verb. The predictions were that the biasing context would lead the participants to prefer one of the verb’s multiple senses, which in turn would influence which subcategorization frame was chosen to complete the sentence fragment. Results showed that the sense of the verb targeted by the preceding context was used in the majority of sentence completions following DO-biasing contexts (76%) and SC-biasing contexts (89%). T-tests revealed that the DO or SC subcategorization frame associated with a specific sense of the verb was used more often when biasing context was provided compared to sentence completion norms of the same verbs without context.

Based on these results, Hare et al. (2003) argue that although sense does not entirely constrain structure, the syntactic frames selected by the participants were affected by the preceding context biasing the verb toward a specific sense. They claim that in future explanations of the source of verb subcategorization bias, a semantic variable should be included as one of several factors that determine which of multiple subcategorization frames is used in an utterance. These claims are consistent with previous studies that have reported effects of extra-sentential context on online comprehension (Pickering & Traxler, 1998; Vu et al., 2000).

Previous research has shown that L2 learners use verb subcategorization information in sentence processing and production (Dussias & Cramer Scaltz, 2008; Kim, 2021; Qian et al., 2019). In these studies, as with the previous studies on monolingual readers, verb bias was computed across all instances of the verb. The



present study was designed to investigate whether L2 learners' knowledge of verb subcategorization bias information is as fine-grained as monolingual English speakers, and if they are capable of considering preceding context when determining the sentence structure for verbs that allow more than one subcategorization frame.

### 3. Research Method

#### 3.1. Participants

33 Korean L2 learners of English enrolled as undergraduate students at a university in Korea were recruited as participants for the present study. Through pre-experiment interviews, one participant who had experience living in an English-dominant country for 72 months was excluded from the main task to minimize any effects that may arise from exposure to verb subcategorization probabilities in different linguistic environments (Dussias & Sagarra, 2007; Juffs, 1998). The remaining 32 participants had not lived in a country where English was the main language for a period of more than one year. The participants' mean age was 23.06 (SD=2.63), and they reported first learning English at age 7.74 (SD=1.99). The participants' mean TOEIC (Test of English for International Communication) score was 870.67 (SD=100.05).

#### 3.2. Experimental Materials

22 English verbs that could take both DO and SC arguments were chosen as experimental stimuli. 19 verbs were selected from the verbs used in Hare et al. (2003), with the exception of the verb *project*, as it was possible that the verbal use

of *project* might be unfamiliar to the L2 participants compared to the use of this word as a noun. The verbs used as experimental stimuli are presented below in Table 1.

recall	declare	confirm	feel	know	acknowledge
admit	report	observe	insert	believe	anticipate
reflect	reveal	grasp	add	suspect	recognize
claim	indicate	bet	find		

Table 1. Verbs used as experimental stimuli

Sentence fragments was constructed for each of the verbs consisting of a pronominal subject and the verb in the past tense form, e.g., *She found \_\_\_\_\_*. The sentence fragments were preceded by one-sentence contexts designed to establish a scenario that biased the verb toward a target sense which in turn prefers either the DO or SC subcategorization frame. Two different sentence contexts were constructed for each verb. One of the sentence contexts biased the verb toward DO-subcategorization, and the other context biased the verb toward SC-subcategorization. The sentence fragment following the two versions of context sentences was identical. A sample item with the verb *find* is presented below.

(2) a. DO-biasing context

Alice had been searching for the novel for an entire week, and yesterday she was finally successful. She *found \_\_\_\_\_*.

b. SC-biasing context

The students hated having to read the textbook because it was so difficult. They *found \_\_\_\_\_*.

The DO-biasing context in (2a) establishes a scenario where the verb *found* is used

to mean 'locate' and prefers a DO subcategorization frame, as in 'She found the book.' In contrast, the SC-biasing context in (2b) leads the reader to activate the meaning of 'realize'. In this case, the SC subcategorization frame is more likely to follow the verb *found*. The pairs of biasing contexts and sentence fragments containing the 22 verbs were counterbalanced across two lists, so that each participant saw a verb with only one biasing context. This design enabled each participant to see eleven verbs preceded by a DO-biasing context and eleven verbs preceded by an SC-biasing context.

20 filler items with various syntactic structures were constructed. The second sentence of the filler items was also a sentence fragment similar to the experimental items, but was truncated at various points in the sentence and not always after the main verb. The two lists were presented in a pseudo-random order so that no more than two test items followed each other in succession.

Each participant was given the written production task to complete in a quiet room. They were instructed to fill in the blank to complete the sentence with their own words so that the result is a complete, grammatical sentence that makes sense. The entire procedure took about 30 minutes.

## 4. Results

Sentence completions were categorized using the criteria provided by Hare et al. (2003). When the verb in the sentence fragment was followed by an NP complement, the sentence completion was categorized as a DO-completion. Sentence fragments followed directly by an embedded clause, both with or without the complementizer *that*, were categorized as SC-completions. Other types of syntactic structures,

including intransitive and infinitival structures were categorized as Other. Ungrammatical completions were also excluded from the data analysis, with the exception of misspellings that did not affect the overall structure of the sentence. A total of 36 ungrammatical sentence completions and 32 Other responses, accounting for 9.37% of the entire data, were excluded from the remaining analysis. The remaining sentence completions were categorized and used to calculate the percentage of DO and SC subcategorization preferences for each verb in the DO-biasing and SC-biasing contexts.

Instead of using paired t-tests to compare whether there was a significant difference in the percentage of DO- and SC-completions found for each verb according to preceding context, as in Hare et al. (2003), the data in the present study were analyzed using mixed effects logistic regression models (Jaeger, 2008) using R software (version 4.3.3). Mixed effects models analysis is more appropriate for analyzing categorical data as the sentence completion data that were analyzed consisted of either DO-completions or SC-completions. In the final, best-fitted model, sentence context was included as the predictor variable, and participant and item were included as crossed random effects. Figure 1 illustrates the number of DO- and SC-completions after each of the biasing contexts, and Table 1 shows the results of the final model.

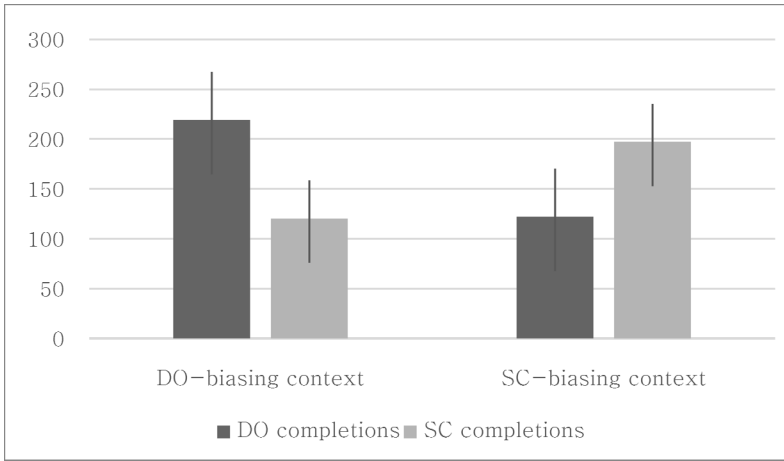


Figure 1. Number of sentence completions by context

	Coefficient	SE	Wald Z	<i>p</i>
Intercept	-0.79	0.30	-2.61	< .01*
Context	1.40	0.19	7.20	< .0005*

Table 2. Logistic regression model of sentence completions

\**p* < .05

As can be seen in Figure 1, the pattern of subcategorization preferences calculated across the 22 verbs reversed according to the preceding sentence context. When the sentence fragment was preceded by context biasing the reader toward the DO-biased sense of the verb, the number of DO completions that were found was 1.83 times greater than the number of SC completions (219 DO completions vs. 120 SC completions). The opposite pattern was found when the sentence fragment was preceded by SC-biasing context. In this case, the number of SC completions was 1.61 times greater than the number of DO completions (122 DO completions vs. 197 SC completions) that were found in the data.

The effects of preceding context on the subcategorization preferences of the verbs were statistically confirmed in the mixed effects logistic regression analysis. As shown in Table 2, the main effect of context was statistically reliable, indicating that the L2 learners were significantly more likely to complete the sentence fragment with an SC argument when it was preceded by SC-biasing context ( $z = 7.20, p < .0005$ ).

Table 3 shows the mean subcategorization frequencies of the 22 verbs averaged across both types of context grouped by verb bias preference according to the norming data provided in Garnsey et al. (1997) and Hare et al. (2003). A verb was categorized as either DO-bias or SC-bias if the mean percentage of DO completions exceeded 50% of the total sentence completions and was twice as large as the mean percentage of SC completions obtained in the norming data, with the reverse criteria applying to the categorization of SC-bias verbs. Verbs that did not fall into the DO-bias or SC-bias verb category were classified as Equi-bias verbs.

Verb bias category	DO-bias (n=10)	Equi-bias (n=6)	SC-bias (n=6)
Proportion of SC subcategorizations (SD)	0.36 (0.19)	0.54 (0.28)	0.61 (0.19)

Table 3. Proportion of SC subcategorizations calculated across sentence context

According to the norming criteria provided by Garnsey et al. (1997) and Hare et al. (2003), ten of the verbs used in the present study fell into the DO-bias verb category, six into the SC-category, and six verbs were classified as Equi-bias verbs. The descriptive data provided in Table 2 show an incremental increase in the proportion of SC completions from DO-bias to Equi-bias to SC-bias verbs. T-tests revealed a significant difference in the proportion of SC completions between the

DO-bias and SC-bias category verbs ( $t = 2.30, p < 0.05$ ). The difference in the proportion of SC completions between the DO-bias and Equibias verbs and the difference between the SC-bias and Equibias verbs were not statistically significant ( $ts < 0.90, ps > 0.39$ ).

## 5. Discussion

Verb subcategorization bias is a factor that has been known to occupy a prominent role in language processing and production, as well as in testing the predictions of constraint-based theories of language processing (Altmann, 1999; MacDonald et al., 1994; Spivey & Tanenhaus, 1998). Many studies have shown that like monolingual speakers, L2 learners of English are also sensitive to the relative probabilities of a verb occurring with a particular subcategorization frame and use this information to guide syntactic analysis during processing and production (Dussias & Cramer Scaltz 2008; Gahl & Garnsey, 2004; Lee et al., 2013).

In most previous research, verb bias subcategorization frequencies have been calculated based on the proportion of DO or SC subcategorization frames that were found across all occurring instances of a verb, either through norming tasks (Pickering et al., 2000) or analyses of different corpora (Gahl et al., 2004). Recently, however, Hare et al. (2003) argued that this method of computing verb subcategorization preferences was problematic, as many verbs in English had multiple related senses, for which subcategorization probabilities could differ. Their analysis of sentence completion data provided by monolingual English speakers revealed that the subcategorization tendencies of polysemous English verbs reversed with preceding context biasing the reader toward a specific sense of the verb. These results support

their claim that one of the sources of verb subcategorization bias may be explained by a semantic variable.

The present research built on the findings of Hare et al. (2003) and tested whether L2 learners of English were also capable of using contextual information to retrieve the subcategorization information associated with the appropriate verb sense. The underlying assumption of the sentence completion task was that the biasing semantic context preceding the verb would lead the participants to prefer a specific sense of the verb, and that this in turn would lead to a preference for one of the multiple subcategorization frames that were available. If the sentence completions for the same verb showed effects of preceding context on subcategorization frequencies, these results would suggest that a revision is necessary to current accounts of verb subcategorization bias.

The analysis of the sentence completion data confirmed these predictions. The significant effect found for context indicates that the L2 participants were significantly more inclined to use an SC subcategorization frame when the context preceding the verb biased the reader toward the SC-biased sense of the verb, and vice versa. With both DO-biasing and SC-biasing contexts, sentence completions in which the intended subcategorization frame were used were more frequent compared to cases where the chosen subcategorization frame and the preceding context did not match. These results suggest that the participants' choice of subcategorization frame for the verb was influenced by structural expectations promoted by the preceding semantic context.

The finding that L2 learners are sensitive to different subcategorization frequencies contingent on verb sense does not imply that overall verb subcategorization bias does not play a role in guiding processing and production. The analysis of the average verb subcategorization frequencies measured across both DO-biasing and SC-biasing



contexts shows a clear difference in mean verb bias preference between the DO-bias verbs and SC-bias verbs. The verbs classified as having an overall DO-bias preference used an SC argument in only 36% of all sentence completions while in contrast, sentence completions for verbs classified as SC-bias chose an SC argument for 61% of all sentence completions. These results indicate that it is true that verbs differ in their overall subcategorization biases. The present study, in line with Hare et al. (2003)'s claims, suggest that for those verbs that allow multiple subcategorization frames, verb sense may be one of several factors that determine which subcategorization will actually be chosen.

The findings from the L2 learner data in the present study, in addition to the monolingual data reported by Hare et al. (2013), present additional issues that must be addressed in current theories of the role of verb subcategorization bias in interactive constraint-based theories of processing. It is clear that verbs have a strong tendency to prefer a certain subcategorization frame over others. In particular, verbs that are not polysemous and have only one sense are predicted to show no effects of context, as no difference is predicted between the computation of verb-specific bias and sense-specific bias. However, for verbs that have multiple related senses and allow more than one subcategorization frame, semantic context is a factor that may affect the syntactic frame that is chosen. Even for verbs with multiple senses, the significant difference in verb subcategorization bias found between DO-bias verbs and SC-bias verbs when verb bias was computed across both contexts suggests that one of the verb's multiple senses may be more dominant than the other. This may lead to a more frequent use of the subcategorization frame associated with the dominant sense, which accounts for the differences in overall verb bias preference. Furthermore, potential problems may arise when categorizing verbs into discrete DO-bias, Equi-bias, and SC-bias verb categories when in fact the probabilistic

frequencies of verb subcategorization are of a continuous, and not categorical nature (Gahl et al., 2004). This type of discrete categorization method risks obscuring the wide variation of verb bias frequencies that may be found among verbs in the same verb bias category. Recent studies have addressed this issue by treating verb bias probabilities as a continuous variable in their analysis of the data (Lee et al., 2013; Kim, 2021).

The results of the present study showing that sentence context is a factor that influences which subcategorization frame is chosen for a verb has significant implications for future studies. When constructing experimental stimuli for processing experiments or sentence production norming data, a closer examination of the verbal stimuli is necessary to determine whether multiple subcategorization frames are allowed and whether or not the sentential context is biasing the reader toward one of the multiple frames. A failure to consider potential effects of context as a variable may result in the failure to find significant patterns that exist in the data.

## 6. Conclusion

The present study found that the distribution of subcategorization frames chosen by L2 learners in a sentence completion task was significantly affected by the preceding semantic context. The effects of context on verb subcategorization bias frequencies for L2 learners are similar to the results found for monolingual English speakers by Hare et al. (2003). The contribution of the present study is to establish that like monolinguals, L2 learners are also able to use extra-sentential context as a cue that guides their choice of subcategorization frame for a given verb. In contrast to traditional theories in which verb subcategorization bias is computed across all

instances of a verb, these results suggest that future theories should incorporate semantic context as a factor that is taken into consideration in guiding the processing of temporarily ambiguous sentences.

The L2 learners in this study were of intermediate to high proficiency. Previous studies have shown effects of L2 proficiency on the use of verb subcategorization bias (Qian et al., 2019) and suggest that L2 proficiency may also be a factor that affects the extent to which L2 learners are sensitive to semantic context in their choice of verb subcategorization frame. Further studies with participants differing in L2 proficiency level will be needed to investigate this topic.

## Works Cited

- Altmann, Gerry. "Thematic Role Assignment in Context." *Journal of Memory and Language*, vol. 41, 1999, pp. 124-45.
- Dussias, Paola, and Tracy Cramer Scaltz. "Spanish-English L2 Speakers: Use of Subcategorization Bias Information in the Resolution of Temporary Ambiguity During Second Language Reading." *Acta Psychologica*, vol. 28, 2008, pp. 501-13.
- Dussias, Paola, and Nuria Sagarra. "The Effect of Exposure on Syntactic Parsing in Spanish-English Bilinguals." *Bilingualism: Language and Cognition*, vol. 10, no. 1, 2007, pp. 101-16.
- Ferreira, Fernanda, and John Henderson. "Use of Verb Information in Syntactic Parsing: Evidence from Eye Movements and Word-by-word Self-paced Reading." *Journal of Experimental Psychology: Learning, Memory, and Cognition*, vol. 16, 1990, pp. 555-68.
- Ferreira, Victor, and Elizabeth Schotter. "Do Verb Bias Effects on Sentence Production Reflect Sensitivity to Comprehension or Production Factors?" *The Quarterly Journal of Experimental Psychology*, vol. 66, 2013, pp. 1548-71.
- Frazier, Lyn. *On Comprehending Sentences: Syntactic Parsing*. 1978. U of Connecticut, PhD dissertation.
- Frazier, Lyn, and Charles Clifton. *Construal*. Cambridge, MA: MIT Press. 1996
- Gahl, Susanne, and Susan Garnsey, 2004. "Knowledge of Grammar, Knowledge of Usage: Syntactic Probabilities Affect Pronunciation Variation." *Language*, vol. 80, 2004, pp. 748-75.
- Gahl, Susanne, et al. "Verb Subcategorization Frequencies: American English Corpus Data, Methodological Studies, and Cross-Corpus Comparisons." *Behavior*

- Research Methods, Instruments, and Computers*, vol. 36, no. 3, 2004, pp. 432-43.
- Garnsey, Susan, et al. "The Contributions of Verb Bias and Plausibility to the Comprehension of Temporarily Ambiguous Sentences." *Journal of Memory and Language*, vol. 37, 1997, pp. 58-93.
- Hare, Mary, et al. "Sense and Structure: Meaning as a Determinant of Verb Subcategorization Preferences." *Journal of Memory and Language*, vol. 48, 2003, pp. 281-303.
- Jaeger, Florian. "Categorical Data Analysis: Away from ANOVAs (Transformation or Not) and Towards Logit Mixed Models." *Journal of Memory and Language*, vol. 59, 2008, pp. 434-46.
- Juffs, Alan. "Some Effects of First Language Argument Structure and Morphosyntax on Second Language Sentence Processing." *Second Language Research*, vol. 14, no. 4, 1998, pp. 406-24.
- Lapata, Maria, et al. "Verb Frame Frequency as a Predictor of Verb Bias." *Journal of Psycholinguistic Research*, vol. 30, 2001, pp. 419-35.
- Kim, Ji Hyon. "The Effects of Verb Bias in the Written Production of English Sentences by L2 Learners." *Journal of British and American Studies*, vol. 51, 2021, pp. 223-50.
- Lee, Eun-kyung, et al. "L1 Word Order and Sensitivity to Verb Bias in L2 Processing." *Bilingualism: Language and Cognition*, vol. 16, 2013, pp. 761-75.
- MacDonald, Maryellen, et al. "Lexical Nature of Syntactic Ambiguity Resolution." *Psychological Review*, vol. 101, 1994, pp. 676-703.
- McRae, Ken, et al. "Thematic Roles as Verb-specific Concepts." *Language and Cognitive Processes*, vol. 12, 1997, pp. 137-76.

- Mitchell, Don. "Lexical Guidance in Human Parsing: Locus and Processing Characteristics." *Attention and Performance XII: The Psychology of Reading*, edited by Max Coltheart, Erlbaum, 1987, pp. 601-18.
- Pickering, Martin, and Matthew Traxler. "Plausibility and Recovery from Garden-paths: An Eyetracking Study." *Journal of Experimental Psychology: Learning, Memory, and Cognition*, vol. 24, 1998, pp. 940-61.
- Pickering, Martin, et al. "Ambiguity Resolution in Sentence Processing: Evidence Against Frequency-based Accounts." *Journal of Memory and Language*, vol. 43, 2000, pp. 447-75.
- Qian, Zhiying, et al. "Native and Non-Native (L1-Mandarin) Speakers of English Differ in Online Use of Verb-based Cues About Sentence Structure." *Bilingualism: Language and Cognition*, vol. 22, no. 5, 2019, pp. 897-911.
- Roland, Doug, and Daniel Jurafsky. "Verb Sense and Verb Subcategorization Probabilities." *The Lexical Basis of Sentence Processing: Formal, Computational, and Experimental Issues*, edited by Paola Merlo and Susanne Stevenson, John Benjamins, 2002. pp. 303-24.
- Spivey, Michael, and Michael Tanenhaus. "Syntactic Ambiguity Resolution in Discourse: Modeling the Effects of Referential Context and Lexical Frequency." *Journal of Experimental Psychology: Learning, Memory, and Cognition*, vol. 24, 1998, pp. 1521-43.
- Trueswell, John, et al. "Verb-Specific Constraints in Lexical Preference from Garden-Paths." *Journal of Experimental Psychology: Learning, Memory, and Cognition*, vol. 19, 1993, pp. 528-53.
- Vu, Hoang, et al. "The Influence of Global Discourse on Lexical Ambiguity Resolution." *Memory and Cognition*, vol. 28, no. 2, 2000, pp. 236-52.
- Wilson, Michael, and Susan Garnsey. "Making Simple Sentence Hard: Verb Bias

Effects in Simple Direct Object Sentences.” *Journal of Memory and Language*, vol. 60, 2009, pp. 368-92.

## 국문초록

### 문맥이 L2 학습자의 동사 편향 정보 처리에 미치는 영향

김 지 현

단독 / 한국외국어대학교

본 연구의 목적은 L2 학습자들의 영어 작문에서 사용되는 동사의 하위범주화 패턴을 살펴보고, 문맥이 동사의 하위범주화 편향에 영향을 미치는 요소인지 살펴보는 것이다. 32명의 한국인 L2 영어 학습자 실험참여자들은 22개의 영어 동사가 포함된 문장 완성 글쓰기 실험에 참여하였다. 문장완성 과제에 사용된 22개의 영어 동사는 연관된 의미가 있는 여러 개가 있는 다의어였으며, 의미에 따라 선택되는 동사의 하위범주화 편향 정보가 상이하였다. 실험참여자들이 완성해야 하는 문장 전에 주어진 맥락을 제공하는 문장은 동사의 여러 의미 중 한 가지 의미를 선택하도록 유도하는 역할을 하였다. 완성된 문장을 모두 분석한 결과, 실험참여자들은 문맥에 따라 유도된 동사의 의미에 해당하는 하위범주화 틀을 선택하는 것을 확인할 수 있었다. 본 실험의 결과를 토대로 한국인 L2 영어 학습자들은 원어인 영어 화자와 유사한 패턴으로 의미에 따라 동사의 하위범주화 틀을 선택하여 사용한다는 것을 볼 수 있었다. 기존의 문장처리 연구에서는 동사의 하위범주화 편향 정보를 산출할 때 의미를 하나의 요소로 고려하지 않고 통합적인 하위범주화 틀을 산출하였는데, 본 연구 결과를 바탕으로 기존의 동사 하위범주화 편향을 다루는 이론의 보완점과 함의도 함께 제시되었다.

**주제어:** 동사 하위범주화 편향, 문맥, 의미, L2 학습자, 영어 글쓰기



논문접수일: 2024.5.15

심사완료일: 2024.5.30

게재확정일: 2024.6.08

이름: 김지현

소속: 한국외국어대학교 영어통번역학부 교수

이메일: kimjhyon@hufs.ac.kr

